SEA GRANT'S ROLE IN COASTAL OCEANS RESEARCH

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Congress created The National Sea Grant College Program in 1966 to support "programs of education and research in . . . the development, conservation, or economic utilization . . . of the marine environment." The Sea Grant concept is similar to the Land Grant College approach to agriculture. University faculty apply their talents to the problems of marine industries and environment. Originally in the National Science Foundation, the National Sea Grant College Program emerged in the early 1970's as part of the National Oceanographic and Atmospheric Administration (NOAA) in the Department of Commerce (DOC) (Hanson et al., 1985). The administrative relationship with a line agency broadened the perspective of the Sea Grant Program. A perspective that continues to broaden as issues associated with water pollution, global climate change and their effects become clear. In today's presentation, I will discuss the Georgia Sea Grant College Program, NOAA initiatives and the process of program development.

HISTORY

Georgia's participation in the Sea Grant Program began in 1968 with Dr. John Noakes' study of the use of activation analysis to identify seafloor elemental contents. The first Coherent Area Program level, which supported a project on marsh ecosystems, began in 1971. By 1974 the Program reached the level of Sea Grant Institution. In 1980, having demonstrated excellence in applied research, education and advisory service, The University of Georgia became the nation's fifteenth Sea Grant College. Recertification in 1990 reaffirmed the college status. Federal funding grew as the Program reached successive levels of excellence from $237,000 in 1971 to $506,900 in 1974 to the present level of $987,000 in 1990. The University of Georgia is the Georgia Sea Grant College, but projects are funded from other institutions. In the 10-year period from 1980 to 1989 projects were funded in 28 units of four University System institutions and one private institution (Chin and Rivers, 1990).

THE SEA GRANT ENVIRONMENTAL RESEARCH PROGRAM

The needs in marine science and technology exceed the funding available to the Georgia Sea Grant Program. Thus, the Program focuses on project areas that reflect the priorities and talents available within the academic community in Georgia. The priority areas emphasized over the 20 year history of Georgia Sea Grant are living resources, fisheries, seafood science, coastal wetlands and environmental quality.

The Marine Institute on Sapelo Island has focused attention on the importance of coastal wetlands for nearly forty years. Pioneers, like Dr. Eugene Odum, hypothesized about the role of coastal wetlands and their contribution to the productivity of nearshore ocean through outwelling. Testing these hypotheses remains the focus of much of the Sea Grant research in this field. Objectives of recent research are (1) to determine the role of estuaries as nursery grounds, (2) to test Dr. Odum's outwelling hypothesis and (3) to determine the processes that occur in the detrital food webs (Chin and Rivers, 1990).

Environmental quality is of growing importance in the coastal and continental shelf environ-ments. Previous projects investigated the effects of oil pollution on salt marshes, the microbial degradation of organochlorine compounds and the role of the salt marsh in reducing levels of heavy metals. The current objectives in this field are (1) to determine the biogeochemical processes that influence the fate of pollutants in the marine environment, (2) to determine how pollutants are transformed in the estuarine environment and (3) to find out the effects of pollutants on the organisms that take them up.

Funding for environmental research in the Georgia Sea Grant Program is a substantial portion of the research budget. In 1989-1990, twenty-seven percent ($284,300) funded projects studying coastal wetlands. An additional 19 percent ($206,000) went to projects in environ-mental quality (Figure 1).

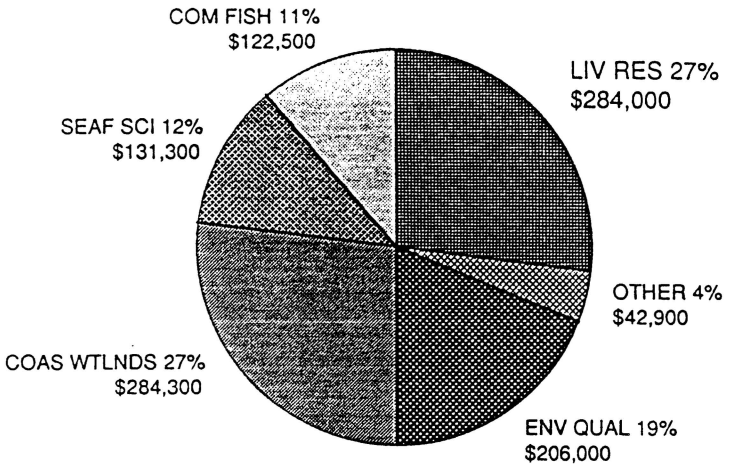

Figure 1. Allocation of Federal Sea Grant Research Funds 1989 - 1990

PROPOSAL DEVELOPMENT PROCESS

Twenty-nine Sea Grant Programs in the coastal and Great Lakes states provide the academic base for the National Program. In fiscal 1991 these Programs will compete for $40.8 million. Sea Grant is a partnership between the universities, government and marine industries, and requires a minimum 2:1 federal to non-federal match. Each Sea Grant Program proposal is a coordinated collection of individual projects that are included in the omnibus proposal only after peer review.

The review process uses seven criteria to evaluate projects (Wildman,R., personal communi-cations, 1990): (1) rationale for the project in development, use, or management of marine or coastal resources, (2) scientific merit that advances the discipline, (3) innovativeness of the approaches to solving problems and exploiting opportunities in resource management or development, (4) programmatic justification toward the objectives of a sub-program in a state, regional, inter-institutional, or national Sea Grant program, (5) users input into the projects planning or its execution and the strategy for informing them of progress and results, (6) relationship to Sea Grant priorities or the special focus programs, and (7) qualifications and scientific record of the investigators.

As befits a partnership between universities, industries and government, Sea Grant maintains a close relationship with its marine clientele. Advice from industry and agency contacts is an essential first step in project development. The next step is to identify individuals within the university community who can address these questions. Sea Grant projects require a wide spectrum of disciplines including fisheries biology and technology, biotechnology, geology, microbiology, economics, marine policy and social sciences.

The Georgia Sea Grant program operates on a two year funding cycle that begins again in September 1992. The proposal development process, however, begins during fall 1991. Pre-proposals must be submitted by October 11, and proposals should be written only after discussion of a project's appropriateness for Sea Grant funding. If requested, a complete proposal must be submitted by October 21 for peer review. If the reviews are favorable or investigators adequately address the concerns of reviewers, the project is submitted in the omnibus proposal. At the National Office, projects undergo additional peer reviews. The last step is a site review where investigators make oral presentations to a select team of experts.

After completion of the review process, the National Office staff compares and ranks the projects. Based on the cumulative ranking of its projects, the funding level for competing Sea Grant Programs is set. The ten Sea Grant Programs in Georgia's group include Woods Hole Oceanographic Institution, MIT, the University of Wisconsin, the University of Southern California and the University of South Carolina. The process is highly competitive.

NOAA COASTAL OCEANS PROGRAM

Further evidence of NOAA's and Sea Grant's interest in environmental studies is the Coastal Oceans Program. This is a new NOAA initiative, which involves NOAA laboratories and the Sea Grant institutions, concentrating on estuarine and nearshore ocean research. There are five program areas - toxics management, estuarine habitats, coastal fisheries ecosystems, nutrients enhanced productivity and physical impacts. Two program areas particularly involve Sea Grant institutions. First, the Nutrient Enhanced Coastal Ocean Productivity (NECOP) studies are initially in the Mississippi/Atachafalaya River system and the nearshore Louisiana continental shelf. Of funding totaling $1.64 million, 60 percent was to seven Sea Grant institutions in FY 90. Second, the Estuarine Habitat Research Program (EHRP) now emphasizes processes causing degradation of seagrass and salt-marsh habitats and their restoration or enhancement. Of funding totaling $1.03 million, 63 percent went to 12 Sea Grant institutions, including The University of Georgia (Wildman, R., personnel communication, 1990).

The Coastal Oceans Program (COP) appropri-ations increased from $6.4 million to $10.4 million in FY 91. Although the FY 91 budget is an increase, it fell short of the anticipated growth of the program. As a result expansion in effort is curtailed this year. But, COP is in the President's budget for $17.3 in FY 92. This budget level should allow the two remaining program areas to

initiate research projects. The goal of the coastal fisheries ecosystems element is to improve predictions of fish stocks to better conserve and manage living marine resources. The physical impacts element focuses on improving predictions of physical impacts on coastal areas to protect life and property (Scavia, D. "NOAA's Coastal Ocean Program." Second Meeting of the Coastal Ocean Policy Roundtable, 1991 February 8, Washington, DC).

NOAA GLOBAL CHANGE RESEARCH PROGRAM

The changes in global climate and the role that humanity is playing in these changes are a concern worldwide. The potential economic and social consequences of global change stimulated a desire for adequate scientific and economic information to make decisions on an international scale. As its contribution to the worldwide effort, the United States created the U. S. Global Change Research Program (USGCRP) to obtain the scientific basis for national and interna-tional policy. USGCRP is an integrated program developed by the interagency Committee on Earth and Environmental Sciences (CEES) of the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET). Ten agencies share the responsibility for the program with the National Aeronautics and Space Administration, the National Science Foundation, Department of Energy and DOC NOAA being the larger components. The science priorities include seven priority areas, and within these priorities, four Integrated Themes are being emphasized in FY 92. These include climate modeling and prediction, global water and energy cycles, global carbon cycle, and ecological systems and population dynamics, with particular emphasis on the first two themes. NOAA's scientific contributions to USGCP include efforts in oceanic atmospheric dynamics, circulation and chemistry; biogeochemical dynamics and response of marine ecosystems to climate change. Funding of NOAA projects was $47 million in FY 91 and is expected to reach $78 million in FY 92. Climate and Hydrologic systems will continue to be the emphasis ($61 million), but biogeochemical dynamics ($10.4 million), ecological systems and dynamics ($2.4 million), earth systems history ($2.2 million), and human interactions ($2.0 million) also will increase (CEEP, 1991).

In FY 1991 funding for extramural projects will be 30-35% of the NOAA effort. Of that $7.5 million is already committed, but $9.9 million is allocated to new starts of short duration projects by investigators in and out of NOAA. A program announcement is currently available for NOAA Climate and Global Change Program, which has an April 1, 1991 deadline (NOAA, 1990).

The important aspect for the academic research community this year is that NOAA is seeking participation from extramural investigators. After considering a USGCP budget that will exceed $1 billion in FY 1992, the funding for extramural research seems small. Still, these funds can mean graduate students and strong research programs at the university level. Where does the Sea Grant College Program fit into this picture? Sea Grant is a direct link to NOAA research funding for the academic community. Coastal Oceans projects are already being routed through Sea Grant College programs. As the NOAA Climate and Global Change Program moves into new phases, I anticipate Sea Grant playing a larger role.

Over the next few years, NOAA COP and Climate and Global Change Program offer promise for expansion of research in coastal and marine environments. The expertise and facilities available within the University System of Georgia make us well positioned to participate in these programs. Coordinating research in the Georgia Sea Grant College Program and other NOAA programs will strength the NOAA sponsored research and provide new opportunities for the academic community.

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